1) The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2) The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Japan 206

3) **Claims 1 and 5 are rejected under 35 U.S.C. 102(b) as being anticipated by Japan 206 (JP 61-081206).**

See abstract and figures, especially figure 1.

Applicant argues that Japan 206 (Kakigi) does not disclose the tread block gradually decreasing in height from the central portion out towards the edges. Applicant is incorrect. Claim 1 requires "a central portion". The central portion in claim 1 reads on the upper surface of one of the protrusions 2 in figure 1. The slanted side surfaces of this one of the protrusions 2 is a gradual decrease in height toward a leading and

trailing edge of the block. Claim 1 fails to require the height to gradually decrease to the leading and trailing edges.

Applicant argues that Japan 206 (Kakigi) does not disclose a recess, located at the front and black of the trailing block, which dents inward beyond the virtual line connecting the block edge to where the height begins to reduce. Applicant is incorrect. With respect to a "virtual line" connecting the edge of the upper surface of the one of the protrusions 2 and the leading edge of the block, the combination of the "slanted side surface" of the protrusion 2 and "the flat surface" of the block between the lower edge of the slanted surface and the leading edge of the block define a "recess" which dents inward of "the virtual line". Claim 1 fails to require the recess to extend along the entire leading edge of the block. The same is true for the trailing edge.

Wise

4) **Claims 1 and 2 are rejected under 35 U.S.C. 102(b) as being anticipated by Wise (US 5,456,301).**

Wise discloses a pneumatic vehicle tire with a tread comprising blocks, circumferential grooves and lateral grooves. Wise provides the central block with a concave relief 122 at the leading and trailing edges. See figures 6 and 7. Since the relief 122 is concave, it is defined by a radius of curvature external to the tire. Since the upper surface of the block is part of the cylindrical tread surface (figures 1-4), the block surface region between the concave reliefs 122 is an "arcuate surface" defined by the internal radius of the tire.

The claimed tire is anticipated by Wise's tire wherein the blocks have a surface configuration as shown in figures 6 and 7.

Applicant argues that Wise's block has a constant height. Applicant is incorrect. In Wise, the "leading edge" of the block is the lower edge of one of the concave reliefs 122 and the "trailing edge" of the block is the lower edge of another one of the concave reliefs 122. With respect to claims 1 and 2, the one concave relief 122 causes the height of the block to decrease from "a central portion" to the "leading edge" of the block and the another concave relief 122 causes the height of the block to decrease from "the central portion" to the "trailing edge" of the block. In claim 1, the claimed recess reads on the concave relief 122. In claim 2, the claimed second arcuate portions read on the concave reliefs 122. With respect to claim 2, the claimed "first arcuate portion, which is formed at the central portion of the block in the circumferential direction and which has a center of curvature inside of the tire" reads on the upper surface of the block ("a central portion"), which as already mentioned is defined by the internal radius of the tire.

Applicant argues "As recited in claim 2, the change in height over the length of the block is defined by an arcuate portion of R3 having its center of curvature within the tire". (page 10 of response filed 1-16-08). Applicant is incorrect. Claim 2 requires "a block height of each block is gradually reduced from a central portion of the block in the circumferential direction toward a leading edge and trailing edge" instead of --the block height of the central portion is gradually reduced from a center of the central portion to an edge of the central portion--.

With respect to radius R3 as shown in applicant's figure 3, applicant argues that the center of curvature would not be located at the center of the tire. This argument is not commensurate in scope with the claim 2 and is therefore not persuasive since claim 2 is not limited to a radius R3 as shown in figure 3 of applicant's disclosure. In claim 2, "a center of curvature inside the tire" is generic to "a center of curvature at the center of the tire".

Applicant argues that the recesses / second arcuate portion recited in claims 1 and 2 connect with the first position / arcuate portion smoothly. This argument is not persuasive. First: Claim 1 requires "a recess" instead of --recesses--. Second: Claim 2 fails to require "smoothly" connecting the first arcuate portion and the second arcuate portion. In other words, applicant's above noted argument is not commensurate in scope with the claims and is therefore not persuasive.

Applicant argues that Wise does not teach a tread block having a height which is fixed at its center and which decreases toward the leading and trailing edges. This argument is not persuasive. First: Claims 1 and 2 fail to require a tread block having "a height which is fixed at its center". Second: The height of Wise's block is changed by the concave relief 122.

Applicant argues that Wise does not teach a tread block wherein the height change is defined by an arcuate portion having a center of curvature within the tire. This argument is not commensurate in scope with the claims and is therefore not persuasive since claims 1 and 2 fail to require "a tread block wherein the height change is defined by an arcuate portion having a center of curvature within the tire".

Lopez et al

5) **Claim 1 is rejected under 35 U.S.C. 102(e) as being anticipated by Lopez et al (US 2004/0045649).**

Lopez et al discloses a heavy vehicle tire (pneumatic tire) with a tread comprising blocks, circumferential grooves and lateral grooves. The block has a specified surface shape for maintaining the average rate of wear while avoiding occurrence of irregular wear. The central block has a contact face 11 comprising surface part 111 and surface part 113. As can be seen from figure 3, the surface part 11 is concave (dented and defined by an external radius) so as to reduce the height of the block from a "central portion" to the block edge.

The claimed tire is anticipated by the block having the surface configuration as shown in figure 3.

Applicant argues that Lopez discloses only one of the leading side and the trailing side having a recess whereas claim 1 recites both the leading edge and trailing edge have a recess dented inward in the tire radial direction beyond a virtual line. This argument is not commensurate in scope with claim 1 and is therefore not persuasive since claim 1 fails to require both the leading edge and trailing edge have a recess dented inward in the tire radial direction beyond a virtual line.

6) **Claims 1, 2, 5 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lopez et al and optionally Japan 221 (JP 09-058221).**

Lopez is considered to anticipate claim 1. In any event, it would have been an obvious alternative to provide the upper surface of Lopez et al's block such that it

comprises two concave curve surfaces 111, 113 instead of one convex curve surface 113 and one concave curve surface 111 since (1) Lopez et al teaches addressing the problem of wear by reducing volume on both sides of the block, (2) Lopez et al describes using a curved concave surface 111 to obtain such a desired reduction in volume (figure 3) and teaches that the same type of curve (albeit convex) may be used on both sides of the block (figure 2) and optionally (3) Japan 221 show that two concave surfaces may be used for a the upper surface of a block in a tire which reduced wear is desired. As to claim 2, both Lopez et al and the optional Japan 221 teach forming the peak of the block using a convex surface. See for example figure 2 of Lopez et al. Japan 221 also teaches joining two concave surfaces with a convex surface.

Applicant argues that Lopez does not suggest the claimed structure. Examiner maintains that it would have been an obvious alternative to provide the upper surface of Lopez et al's block such that it comprises two concave curve surfaces 111, 113 instead of one convex curve surface 113 and one concave curve surface 111 since (1) Lopez et al teaches addressing the problem of wear by reducing volume on both sides of the block and (2) Lopez et al describes using a curved concave surface 111 to obtain such a desired reduction in volume (figure 3) and teaches that the same type of curve (albeit convex) may be used on both sides of the block (figure 2).

With respect to the optional Japan 221, applicant argues that the two ends of the tread in figure 4 of Japan 221 (Harayama) are convex portions instead of recesses. More properly, Lopez et al teaches addressing the problem of wear by reducing volume at the leading and trailing edges of the block and Japan 221, also directed to reducing

wear, shows a block having two concave portions, which reduce the volume of the block at two locations.

As to claim 5, it would have been obvious to one of ordinary skill in the art to provide Lopez et al's blocks with low regions such that $hL \leq 20\%d$ and $L \geq H/5$ are satisfied since Lopez et al teaches providing the greatest volume reduction near the leading and trailing edges (figure 3) - a greater volume reduction extending over a longer length when a concave surface is used.

7) **Claims 3-4, 6-7 and 9-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lopez et al and optionally Japan 221 as applied above and further in view of Comps (US 2002/0170644).**

As to claim 3, it would have been obvious to one of ordinary skill in the art to provide Lopez et al's heavy vehicle tire such that the block height H is 4-6% of the tire radius R depending on the desired tire size since (1) Lopez et al teaches lowering the leading and trailing edges of a central block with respect to block height by reducing front volume V and rear volume V1 as shown in figure 3 to address the problem of wear and (2) Comps teaches using blocks having a height of at least 60 mm (e.g. 80 mm) for a pneumatic tire for a construction vehicle (heavy vehicle) having a size of 44/80R57. One of ordinary skill in the art would readily understand "44/80R57" as describing a rim diameter of 57 inches (1448 mm), a section width of 44 inches (1118 mm) and an aspect ratio of 80%. The section height of the tire is therefore (1112 mm) (0.80) = 894 mm. The tire diameter is therefore1448 mm + 894 mm + 894 mm = 3236 mm. The tire radius is therefore 3236 mm / 2 = 1618 mm. With a block height of 80 mm, the block

height is 80 mm / 1618 mm x 100% = 4.9% tire radius (falling within the claimed range of 4-6%.

As to claim 4, it would have been obvious to one of ordinary skill in the art to provide Lopez et al's heavy vehicle tire such that the height difference d = H-he = 2-7% block height H since (1) Lopez et al teaches lowering the leading and trailing edges of a central block with respect to block height by reducing front volume V and rear volume V1 as shown in figure 3 to address the problem of wear wherein the center of gravity of the volume is located at a distance HG of 0.1-1.0 mm, (2) Lopez et al identifies a distance "d" of 0.3-3.0 mm as being the height difference in an alternative embodiment (paragraph 54) and (3) Comps teaches using blocks having a height of at least 60 mm (e.g. 80 mm) for a pneumatic tire for a construction vehicle (heavy vehicle) having a size of 44/80R57 (paragraphs 9, 23, 39-41). With a block height of 80 mm and a height difference d of 3 mm, the height difference d = 3 mm / 80 mm x 100% = 3.8% (falling within the claimed range of 2-7%).

As to claims 6-7 and 9-11, note examiner's comments on claims 3, 4 and 5.

Remarks

8) Applicant's arguments filed 1-16-08 have been fully considered but they are not persuasive. Applicant's arguments are addressed above.

9) No claim is allowed.

10) **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

11) Any inquiry concerning this communication or earlier communications from the examiner should be directed to Steven D. Maki whose telephone number is (571) 272-1221. The examiner can normally be reached on Mon. - Fri. 8:30 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Crispino can be reached on (571) 272-1226. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Steven D. Maki/
Primary Examiner, Art Unit 1791

Steven D. Maki
April 14, 2008